

# Value Engineering with MCI®-2019 for Concrete Maintenance and Repair



True value engineering saves money without reducing service life or affecting the quality of construction or materials. Ideally, it adds value to the project. MCI®-2019 is one such value engineering solution that can extend the service life of existing concrete structures.

The concept of value engineering is not only for the construction phase, but is also a useful practice during the maintenance and repair stages of existing reinforced concrete structures, ensuring projects get done within budget.

## Benefit of MCI® Water Repellents

MCI®-2019 is a 40% silane, solvent-based concrete water repellent containing Migrating Corrosion Inhibitors. The small molecules of MCI®-2019 can easily penetrate concrete, providing water repellency by

chemically reacting with cementitious substrates under proper application. MCI®-2019 seals surface pores, which prevents intrusion of chloride and carbonation and protects from the ingress of wind-driven rain. Treated areas retain their original appearance and are breathable. MCI®-2019 is an excellent option both as the finishing touch on a concrete repair (where no membrane or coating system is used) and for periodic maintenance every 7-10 years. Since MCI®-2019 increases service life, it can ultimately reduce the use of repair or reconstruction materials, thus contributing to sustainability.

## Coping with Silane Shortages

One of the big challenges for the construction industry today is the issue of raw material shortages (consequently driving the cost of materials up). For instance, silane supplies are often delayed or difficult to find. Using only a 40% silane relaxes the demand and helps the supply go farther while still providing a significant degree of water repellency. Since MCI®-2019 contains Migrating Corrosion Inhibitors that provide active corrosion protection at the rebar, the need for 100% silane is also not as strong because a



dual mechanism is at work to keep corrosives out and resist those that do find their way in.

### Cutting Costs

In addition to working around supply chain shortages, MCI®-2019 is also a great way to help cut costs when working on a limited budget. This is especially true with the current combination of supply chain shortages and inflation driving up the price of silane even farther. Using MCI®-2019 saves costs compared to similar alternative systems. It can help a project stay within budget while still offering an excellent source of corrosion protection.

### Saving Labor Time and Intensity

Another way MCI®-2019 can save costs is simply by requiring less labor than other water repellents and surface applied corrosion inhibitors (SACIs). Silane wears out and erodes over time, so a good maintenance practice is to reapply it at 7–10-year intervals to maintain concrete water resistance and simultaneously add another dose of SACIs. Usually, workers water-blast the surface to make sure the silane residual is completely cleaned off and then apply a new SACI and a 100% silane water repellent. However, with MCI®-2019, this may be unnecessary. Workers can save time by applying one or two coats of a two-in-one product

and leaving the old silane in place. The silane in MCI®-2019 supplements any residual silane, while Migrating Corrosion Inhibitors are still able to penetrate into the concrete. A further advantage is that MCI®-2019 does not etch, stain, discolor, or otherwise harm glass or aluminum.

### Repair of University Towers

In 2015, three 1970's cast-in-place concrete residence towers at a Midwestern university required repair due to rusted rebar in concrete. After using MCI®-2019 instead of a standard 40% solids silane water repellent post-repair, the project's specifying engineer commented, "MCI®-2019 provided a cost-effective solution in applying

both a migrating corrosion inhibitor and a silane sealer in a single product in one application with no resulting color change to concrete façade[s]." The non-etching feature was crucial to the protection of the structure's new windows, and the parties involved were happy with the ease of MCI®-2019 application.

### Be Ready with Multiple Value Engineering Solutions

In today's market, it is important to have many different value engineering options at one's fingertips. MCI®-2019 is one such solution that can help engineers and contractors cope with silane shortages and stay within budget, while fortifying concrete with corrosion inhibitors to extend service life. ●

